REMARKS

Claims 7-18 are currently pending in the application.

Reconsideration of the present application and allowance of the pending claims as amended is respectfully requested in view of the following remarks.

Amendments

Claims 7 and 13 have been amended to clarify the scope of the claims by reciting that passing of a heat exchange fluid past the plurality of catalytic partial oxidation reactors prevents heat spots in the shell *and keeps the temperature of the hydrocarbon fuel less than about 240°C* at the step of feeding the hydrocarbon fuel and oxygen containing gas to the catalytic oxidation reactors. Support for this amendment is found in the specification at least at Page 14, lines 22-23.

Non-obviousness

The Final Office Action has rejected claims 7-18 under 35 U.S.C. 103(a) as obvious over U.S. Patent No. 6,221,280 to Anumakonda et al. (hereinafter "Anumakonda") in view of U.S. Patent Publication No. 2002/0041986 to Wojtowicz et al. (hereinafter "Wojtowicz"), in further view of U.S. Patent No. 4,331,451 to Isogaya et al. (hereinafter "Isogaya"), in further view of U.S. Patent No. 6,602,317 to Metius et al. (hereinafter "Metius"), in further view of U.S. Patent Publication No. 2002/0114747 to Marchand et al. (hereinafter "Marchand"), and in further view of U.S. Patent No. 5,550,298 to Sheldon et al. (hereinafter "Sheldon"). The rejection is respectfully traversed as applied to the claims as amended in view of the following remarks.

The Cited References

Anumakonda discloses an apparatus for catalytic partial oxidation of hydrocarbons.

Wojtowicz discloses a method for producing a hydrogen-rich gas from a hydrocarbonaceous material by (1) pyrolysis of the hydrocarbonaceous material to produce carbon-rich residue and hydrogen gas and (2) combusting a portion of the carbon-rich residue.

Isogaya discloses a process for catalytic gasification of heavy distillates, where the inlet temperature must be higher than 500°C.

Marchand discloses a steam reforming system comprising a steam reformer which converts a fuel into a reformate stream to be fed into a shift reactor. Marchand discloses generally that in one embodiment, heat from an oxidizer can provide heat for a shift reactor. In another embodiment, the shift reactor can be integrated with an absorbent bed to form an integrated reactor. Heat transfer passages extend through the integrated reactor bed so that heat may be transferred to a coolant. The coolant inlet 730 is proximate the reformer outlet 726 and the coolant outlet 732 is proximate the reformate inlet 706. Thus, the coolant travels in a direction opposite the direction of the reformate flow. Paragraphs [0156]-[0163].

Metius discloses an apparatus for reduction of metal oxides using a furnace. Metius briefly mentions that one or more partial oxidation reactors generate the reducing gas used in furnace.

Sheldon discloses a rectifying column having devices including layers of catalyst and flow channels in between the layers for reactants. The devices may be arranged above one another in a tube with adjacent devices staggered by an angle of 90° with respect to the tube axis (See FIG. 1a.).

No Prima Facie Obviousness

Applicants respectfully submit that the Anumakonda, Wojtowicz, Isogaya, Marchand, Metius, and, Sheldon do not establish a *prima facie* case of obviousness against claims 7 and 13 of this application because the prior art references, alone or in combination, do not disclose all of the claim limitations. The combination of Anumakonda, Wojtowicz, Isogaya, Marchand, Metius, and, Sheldon, does not teach or suggest a plurality of catalytic partial oxidation reactors disposed in a shell parallel to and spaced from one another such that each is offset from another along a longitudinal direction of the shell at a plurality of distances, with each of the plurality of distances being greater than the preceding distance along the longitudinal direction of the shell.

Marchand discloses coolant traveling in a direction opposite the direction of the reformate flow in an integrated reactor. However, nothing in Marchand provides an apparent reason for modifying Marchand to pass a heat exchange fluid through a shell and past a plurality of catalytic partial oxidation reactors in the same direction of reactant flow in the catalytic partial oxidation reactors. The *general disclosure* of another embodiment in Marchard where heat from an oxidizer can provide heat for a shift reactor also does not provide an apparent reason to combine the prior art references in the *precise fashion claimed* by Applicants. The methods described in amended claims 7 and 13 do not transfer heat from one reactor to another within the shell, but rather transfer heat from the reactors to reduce heat spots and keep the temperature of hydrocarbon fuel fed into the reactors less than 240°C. The combination of Anumakonda, Wojtowicz, Isogaya, Metius, and Sheldon with Marchand does not supplement this deficiency with any disclosure of an apparent reason to modify the direction of the coolant in Marchand.

Moreover, Sheldon does not disclose or suggest a plurality of catalytic partial oxidation reactors disposed in a shell parallel to and spaced from one another such that each is offset from another along a longitudinal direction of the shell. Rather Sheldon discloses that devices may be arranged above one another in a tube with flow channels of adjacent devices staggered by an angle of 90° with respect to the tube axis. Thus, the spacing between adjacent devices is not staggered in Sheldon, but rather the relationship of the flow channels for adjacent devices is staggered with respect to the tube axis, as illustrated in FIG. 1a of Sheldon. Furthermore, the combination of Anumakonda, Wojtowicz, Isogaya, Metius, and Marchand with Sheldon does not supplement this deficiency with any disclosure of an apparent reason to modify Sheldon in the *precise fashion claimed* by Applicants.

Nor does the combination of Anumakonda, Wojtowicz, Isogaya, Marchand, Metius, and Sheldon disclose or suggest passing heat exchange fluid through a shell and past a plurality of catalytic partial oxidation reactors disposed in a shell parallel to and spaced from one another such that each is offset from another along a longitudinal direction of the shell in the same direction of reactant flow in the catalytic partial oxidation reactors such that *the temperature of the hydrocarbon fuel is less than about 240°C* at a step of feeding the fuel to the reactors. Thus, the combination of Anumakonda, Wojtowicz, Isogaya, Marchand, Metius, and Sheldon, does not disclose such a technical solution of preventing heat spots and excessive heat within a shell containing a plurality of catalytic partial oxidation reactors.

Therefore, a *prima facie* case of obviousness has not been established and the Applicants claims are novel and nonobvious.

In view of the present response to the Office Action, Applicant respectfully requests that a timely Notice of Allowance be issued in this case. If there are any issues which can be resolved by a telephone conference or an examiner's amendment, the Examiner is invited to telephone the attorney at (404) 853-8036.

Respectfully submitted,

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